

PTO 03-1508

CY=DE DATE=19750327 KIND=A1  
PN=2 445 602

SPRAY DEVICE  
[SPRITZEINRICHTUNG]

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UNITED STATES PATENT AND TRADEMARK OFFICE  
Washington, D.C. February 2003

Translated by: FLS, Inc.

PUBLICATION COUNTRY	(10):	DE
DOCUMENT NUMBER	(11):	<u>24 45 602</u>
DOCUMENT KIND	(12):	A1
PUBLICATION DATE	(43):	19750327
APPLICATION NUMBER	(21):	P 24 45 602.8
APPLICATION DATE	(22):	19740924
INTERNATIONAL CLASSIFICATION	(51):	B 05 B 13-04
PRIORITY COUNTRY	(33):	GB
PRIORITY NUMBER	(31):	44709-73
PRIORITY DATE	(32):	19730924
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APPLICANT	(71):	Rizzi (U.K.) Ltd.
TITLE	(54):	SPRAY DEVICE
FOREIGN TITLE	[54A]:	SPRITZEINRICHTUNG

The invention concerns a spray device, in the case of which a surface or surfaces is/are squirted or sprayed with an material, such as dye, paint or the like, by means of at least one spray nozzle moved relative to the surfaces.

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It is known to apply coatings, so-called finishes or the like to leather or other materials by means of spray devices that consist of a conveyor for transporting the leather or the like, and movable spray nozzles located at a point above the conveyor. In this case, the spray nozzles are moved alternating back and forth over the conveyor perpendicular to the direction of travel thereof or in a circular motion. Each of these arrangements has disadvantages, that consist, among other things, in the fact that it is not possible to achieve a uniform distribution of the sprayed material on the leather. In the case of motion back and forth a kind of zigzag path results on the material to be sprayed, that a lot or too much is applied at the turning points - viewed in the direction of travel - and little or too little between the turning points. In the case of circular motion of the spray nozzle, a garland-shaped path, approximately in the form of a drawn-out, flat spiral, is produced on the material, so that a double application is sprayed at the crossing points of the path.

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The object of the invention is to create a spray device, in the case of which the disadvantages of known devices are avoided or

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\*Numbers in the margin indicate pagination in the foreign text.

reduced, therefore with which the most uniform possible distribution of the squirted or sprayed material can be achieved.

In the case of a spray device with a conveyor, such as a conveyor belt, for receiving the objects to be sprayed, such as leather, and at least one spray nozzle mounted movable across the conveyor, this object is achieved according to the invention by mounting a rail above the conveyor, by making the rail oval, with two parallel sections and two semicircular sections connecting the parallel section to the ends thereof, the parallel sections being arranged approximately perpendicular to the direction of motion of the conveyor and the semicircular section above outside the side borders of the actual conveyor, such as the edges of a conveyor belt, the spray nozzle or the spray nozzles being mounted movable along the rail, and driving means being provided for moving the spray nozzle or spray nozzles along the rail. In this case, the spray nozzle or nozzles describes /3 or describe an oval path, of which essentially the straight sections lie over the material to be sprayed and are coated with a uniformly advancing residence time. In this way, a practically uniform application of the sprayed material on the squirted or sprayed material may be obtained taking account of the angle of the spray cone and the residence density therein.

Configurations according to the invention consist in the fact that the spray nozzles or each spray nozzle is located on a carriage

equipped with rollers or the like for running on the rail, further that the driving means contain two pulleys or the like located on the semicircular sections of the rail and contain an endless cable or the like thereon, and that connecting points between the cable and the carriage or carriages are provided, and that the connecting points are made so that they may be released, such as by means of a clamp connection, for easy removal and replacement of the carriage, or each of the carriages.

Advantageously the pulleys are operated by means of a linear induction motor arrangement. This is a simple drive system and it makes it possible to be able to adjust the carriages with the spray nozzles manually.

Further protective means are shown in the following description and/or the drawing in connection with the patent claims.

The drawing shows a schematic example of the invention. Here: /4

Fig. 1 shows a spray device, in perspective,

Fig. 2 shows a top view of a magnified part of the spray device,

Fig. 3 shows the part in section III-III according to Fig. 2,

Fig. 4 shows a perspective view of a section of a further part of the spray device.

According to the drawing, in particular Fig 1, the spray device first consists of a framework 1, in which a conveyor belt 3 runs on roller 2. The conveyor belt 3 runs under a bridge 4 with feelers and

through a slit 5 located therein into a housing surrounding the spray section. Supporting frames 7 and 8 on stands 6 and a rail 9 with two sections 10 and 11 parallel to each other and these endlessly connecting semicircular sections 12 and 13 are mounted there, the last sections lying above outside the conveyor belt.

A - vertical - shaft 14 is mounted on each of the carrier frames 7, 8, on which shaft a sleeve 15 is mounted capable of turning by means of ball bearings 16 and 17, which bears on its upper end a magnetic pulley 18. Under this there is a non-magnetic metal disk 19. Further, a gear 20, that engages with a rack 21 of a speed transducer 22. The supporting frame 7 bears two linear induction motor units 23 and 24, that lie below the pulley 18 and the disk 19. The linear induction motors may be used in a known way for turning the pulley 18 and the disk 19 with control of the speed by means of the ultrasonic generator 22. The supporting frame 8 is equipped on the other side of the oval rail in the same way with a pulley 25 that is not driven. An endless cable 26, to which a number of carriages, each with a spray nozzle 28, is clamped, runs on the pulleys 18 and 25. Each carriage 27 has rollers 29 to the inner running surface, rollers 30 to the outer running surface and rollers 31 to the upper running surface of the rail. Further, a sensing system is provided for guiding the rollers 31 by means of the feeling roller 32 via a conventional guiding device. The carriage or carriages of this kind

is/are describe in greater detail and is/ar the subject of patent \_\_\_\_\_ (Patent Application P \_\_\_\_\_), British Preliminary Application 44710/73).

Each spray nozzle 28 is supplied from a central supply point 33 via flexible lines 34, that are mounted capable of sliding and turning at the supply point 33 and the carriage 27 by means of a carrier 35. In this case, the carrier 35 has a grove on its lower side and expanded heads at the supply point 33, so that the carrier is mounted capable of sliding and turning in the groove. In the same way, each of several spray nozzles but also only one single nozzle may /6 be supplied. However, also all spray nozzles may be connected with a flexible ring-shaped line system that moves along the rail with the spray nozzles.

In the case of application pieces of the material to be sprayed are placed on the conveyor belt and put into the spray area with the latter by means of the slit 5. The spray nozzles are driven along the rail with a speed adjusted to the speed of the conveyor belt, determined by the density of the material to be sprayed. This material is fed to the spray nozzles in a way already explained. The feelers in the bridge 4 can influence the operation of the spray nozzles so that spraying takes place only when corresponding material is located on the conveyor belt, but not onto the empty conveyor belt. It is to be noted that the spray area, with the exception of the slit 5, a corresponding exit slit and a slit 36, by the arms proceeding

from the carriages, bearing the spray nozzles, is completely excluded. Thus the possibility of polluting the environment outside the spray area is largely excluded.

#### Patent Claims

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1. A spray device, in particular with a conveyor, such as a conveyor belt, for receiving the objects to be sprayed, such as leather, and at least one spray nozzle mounted movable across the conveyor, wherein a rail (9) is mounted above the conveyor, the rail is made oval, with two parallel sections (10, 11) and two semicircular sections (12, 13) connecting the parallel section to the ends thereof, the parallel sections are arranged approximately perpendicular to the direction of motion of the conveyor and the semicircular section above outside the side borders of the actual conveyor, such as the edges of a conveyor belt (3), the spray nozzle (28) or the spray nozzles (28) are mounted movable along the rail, and driving means are provided for moving the spray nozzle or spray nozzles along the rail (9).

2. The spray device according to Claim 1, wherein the spray nozzle (28) or each of the spray nozzles (28) rests on a carriage equipped with rollers (29, 30, 31) or the like for running on the rail (9).

3. The spray device according to Claim 2, wherein the driving means contain two pulleys (18, 25) located on the semicircular sections of the rail (9) or the like, and an endless cable (26) or

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the like , and connecting points are provided between the cable and the carriage or carriages (27).

4. The spray device according to Claim 3, wherein the connecting points are made releasable, such as by means of a clamp connection, for easy removal and replacement of the carriage or each of the carriages (27).

5. The spray device according to Claim 3 or Claim 4, wherein the pulley or one of the pulleys (18) is connected with a linear induction motor arrangement (19, 23, 24).

6. The spray device according to Claim 5, wherein the speed of the pulley(s) (18, 25) may be controlled by means of an ultrasonic generator (22).

7. The spray device according to one of the Claims 1 to 6, wherein the spray nozzle (28) or each of the spray nozzles (28) is connected by means of flexible lines (34) with a supply tank for the material to be squirted or sprayed.

8. The spray device according to Claim 7, wherein the flexible lines (34) are supported on a carrier capable of turning and sliding on or near the supply tank.

9. The spray device according to one of the Claims 1 to 8, wherein a feeler or feelers is/are mounted in the direction of travel behind the rail (9) and on or under the conveyor (3), and that this/these feeler(s)

is/are connected with a control device for controlling the mode of operation of the spray nozzle(s).

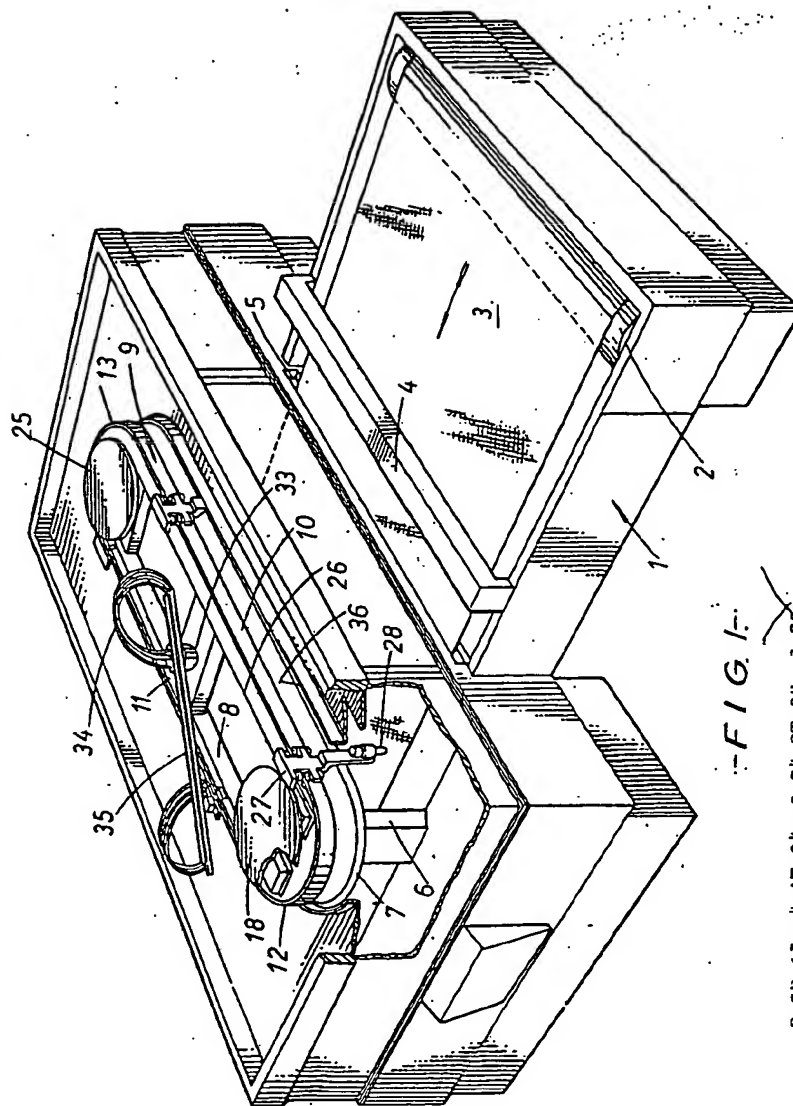


FIG. 1

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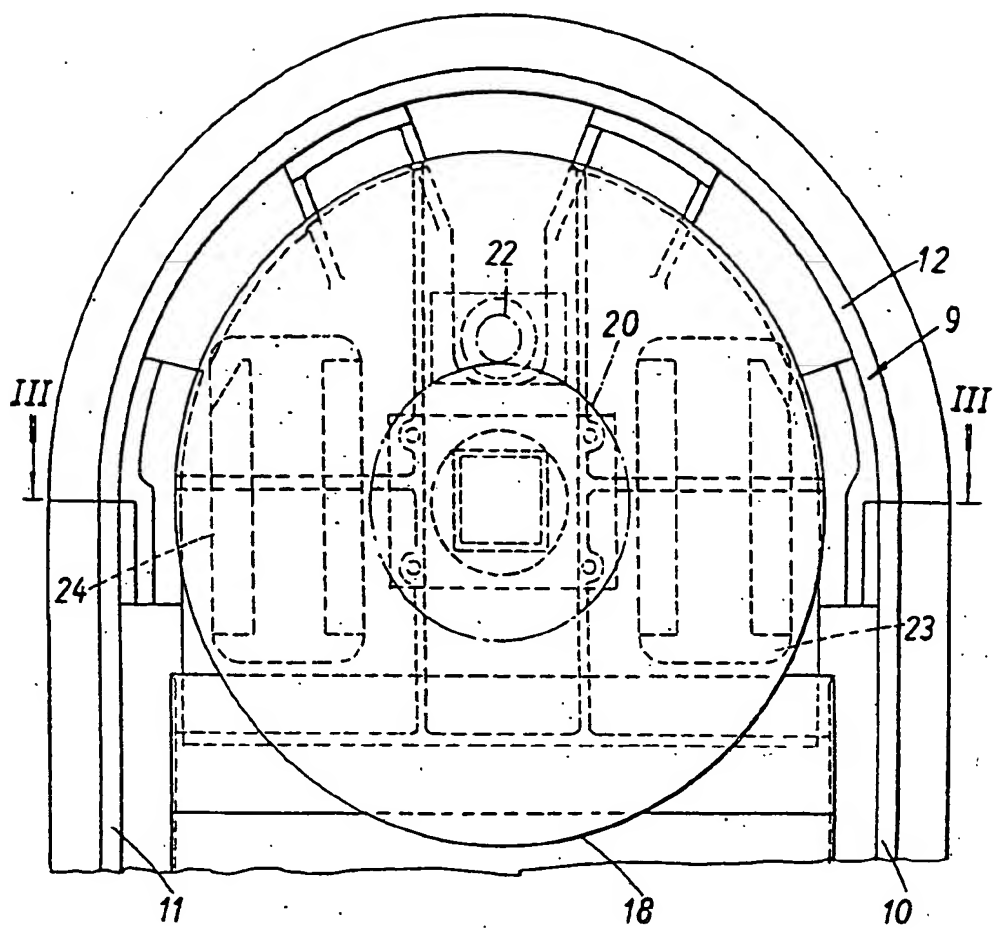


FIG. 2.

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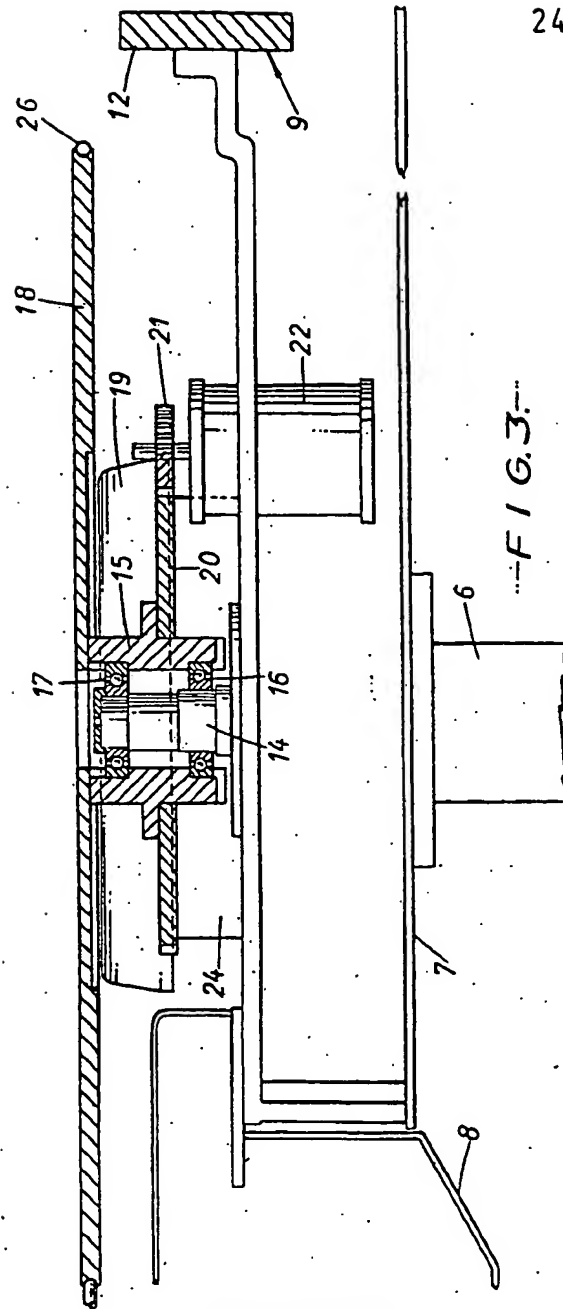


FIG. 3

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